

12 **EUROPEAN PATENT APPLICATION**

21 Application number: 89202583.4

51 Int. Cl.<sup>5</sup>: B66C 1/10

22 Date of filing: 12.10.89

30 Priority: 12.10.88 NL 8802509

43 Date of publication of application:  
25.04.90 Bulletin 90/17

84 Designated Contracting States:  
BE DE ES FR GB IT NL SE

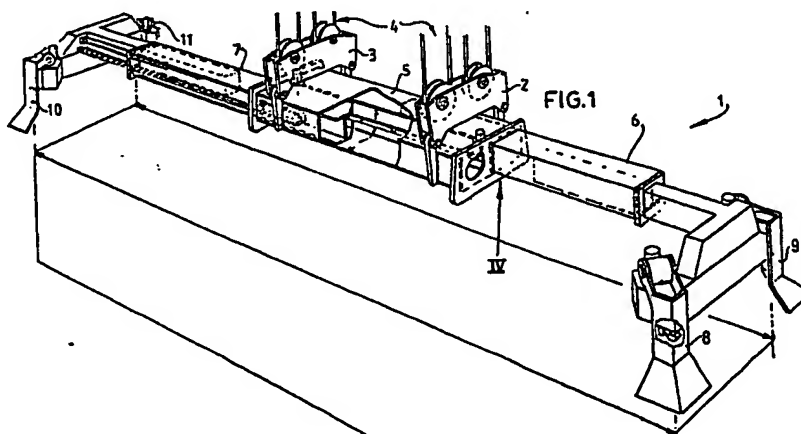
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54 **Hoisting frame for a container.**

57 For hoisting containers so-called spreaders are used. In such a spreader, according to the invention, instead of a framework construction and a chain for driving the beams, a closed box construction (5) is used, provided with a lengthwise middle wall (17). For driving the beams (6, 7) an endless toothed belt (18) drivably engaging drive spindles (22, 23) are mounted in the box construction (5). This makes the spreader considerably lighter in weight and cheaper to produce. Further an extensible cable channel (25) is provided having the form of a flexible ladder channel (24, 25).



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# HOISTING FRAME FOR A CONTAINER

The invention relates to a hoisting frame for gripping and hoisting a container, comprising a guiding block coupled to the connecting means for the hoisting cable, on either side of which block are arranged telescopically in and outwardly slidable beams having on the ends thereof locking members gripping and lockable onto the container, and means for causing the beams to slide outward.

Frames for such hoisting frames have up to the present usually been built up out of a framework construction. The means for making the beams slide outward are thereby formed by a chain construction that is accessible through the openings in the framework. Such a hoisting frame is heavy and costly to manufacture.

The invention has for its object to provide a hoisting frame of the above mentioned type that is considerably lighter in weight and cheaper to produce.

This is achieved according to the invention in that the guiding block consists of a closed box construction, that a lengthwise middle wall is arranged in the box construction and the slide-out means for the beams are formed by an endless toothed belt which is connected to each of the beams and drivably engages drive spindles mounted in the box construction.

A closed box construction with a lengthwise middle wall provides sufficient stiffness for the present purpose. The use of the classic chain construction is however impossible because of the presence of the lengthwise middle wall.

Use of an endless toothed belt of lighter construction is however possible.

The belt is preferably of plastic. The teeth of the belt are placed transversely of the lengthwise direction of the beams.

In preference the telescopic beams are placed asymmetrically in a guiding block. A space is thus obtained between the outward slidable beam and the closely located side wall of the guiding block in which is placed an extensible cable channel. As a result of the extensible character of the cable channel, in the form for instance of a flexible ladder channel, the lines can be supported over the whole path also during sliding out of the telescopic beam.

The invention will be elucidated with reference to the drawings of an embodiment.

In the drawings:

Fig. 1 shows a perspective view of a hoisting frame according to the invention,

fig. 2 is a schematic top view of a hoisting frame according to the invention,

fig. 3 is a perspective view of the guiding block,

fig. 4 shows a perspective view along the line IV in fig. 1,

fig. 5 shows a sectional view along the line V-V in fig. 4, and

fig. 6 is a sectional view along the line VI-VI in fig. 4.

The hoisting frame 1 for gripping a container comprises a guiding block 5 coupled to the connecting means 2, 3 for hoisting cables 4, on either side of which block are arranged telescopically in and outward slidable beams 6, 7. Arranged on the ends of the beams in known manner are the lockable locking members 8, 9, 10, 11.

The guiding block 5 consists of a closed box construction with an top wall 12, side walls 13, 14, a bottom wall 15 and end walls, of which one 16 is visible in fig. 4. In addition a lengthwise middle wall 17 is arranged in order to provide the box construction with a sufficient stiffness. The slide-out means for causing the beams 6, 7 to slide out are formed by an endless toothed belt 18. The toothed belt 18 is connected to the beams at for instance the points 19, 20 and 21. The toothed belt engages drivably onto the drive spindles 22, 23 bearing mounted in the top wall 12 of the box construction 5.

The one portion of the belt 18 is situated on the one side of the lengthwise middle wall 17 and the other portion on the other side.

The beams 6, 7 are placed asymmetrically in the space of the box construction 5 intended for that purpose. Between the beams 6 and the side wall 14 and the beam 7 and the side wall 13 a space remains free in which are arranged the respective extensible cable channels 24 and 25, in the form for instance of the flexible ladder channel. The cable channel guides the lines, for example 26, such that during sliding out of the beams (see fig. 1) they are supported up to the end of the slide-out position. The cable channels 24, 25 are protected during sliding out of the respective beams 6, 7 by the steel walls of the associated beam.

The opening 27 in for instance the end wall 16 of the box construction for passage of the beam 6 is rectangular in shape. Placed in the opening 27 is a horizontal slide bearing of for example plastic 28 for sliding support of the slide-out movement of beam 6. In the corner points are placed metal locking blocks 29, 30, 31, 32 which serve to assimilate the torsional forces exerted on the beam by the swinging container hanging from the hoisting frame. These forces are very considerable. By using corner supports of metal arranged in very close fitting with respect to the beam wear is countered.

For mounting of the beam and the corner supports, recesses 35, 36 are arranged in the oppositely located portions 33, 34.

Assembly takes place as follows. The beam 6 is first inserted into the opening 27 whereafter the U-shaped corner supports 29, 30 and 31, 32 are then placed in the respective recesses 35 and 36 and subsequently moved to the corner points, thereby connecting in close-fitting manner to the beam.

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### Claims

1. Hoisting frame (1) for gripping and hoisting a container, comprising a guiding block (5) coupled to the connecting means (2, 3) for the hoisting cable (4), on either side of which block are arranged telescopically in and outwardly slidable beams (6, 7) and locking members (8, 9, 10, 11) on the ends thereof gripping and lockable onto the container, and means for causing said beams to slide outward, **characterized in that** said guiding block (5) consists of a closed box construction, that a lengthwise middle wall (17) is arranged in said box construction and the slide-out means for said beams (6, 7) are formed by an endless toothed belt (18) which is connected to each of said beams (6, 7) and which drivably engages drive spindles (22, 23) mounted in said box construction.

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2. Hoisting frame (1) as claimed in claim 1, **characterized in that** the belt (18) is of plastic.

3. Hoisting frame (1) as claimed in claims 1-2, **characterized in that** the teeth of the belt (18) are placed transversely of the lengthwise direction of the beams (6, 7).

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4. Hoisting frame (1) as claimed in claims 1-3, **characterized in that** one portion of the belt (18) lies on the one side of the lengthwise middle wall (17) and the other portion lies on the other side of said lengthwise middle wall (17).

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5. Hoisting frame (1) as claimed in claims 1-4, **characterized in that** the telescopic beams (6, 7) are placed asymmetrically in the guiding block (5).

6. Hoisting frame (1) as claimed in claim 5, **characterized in that** in the space between the beam (6) and the closely located side wall (14) of the guiding block (5) is placed an extensible cable channel (25).

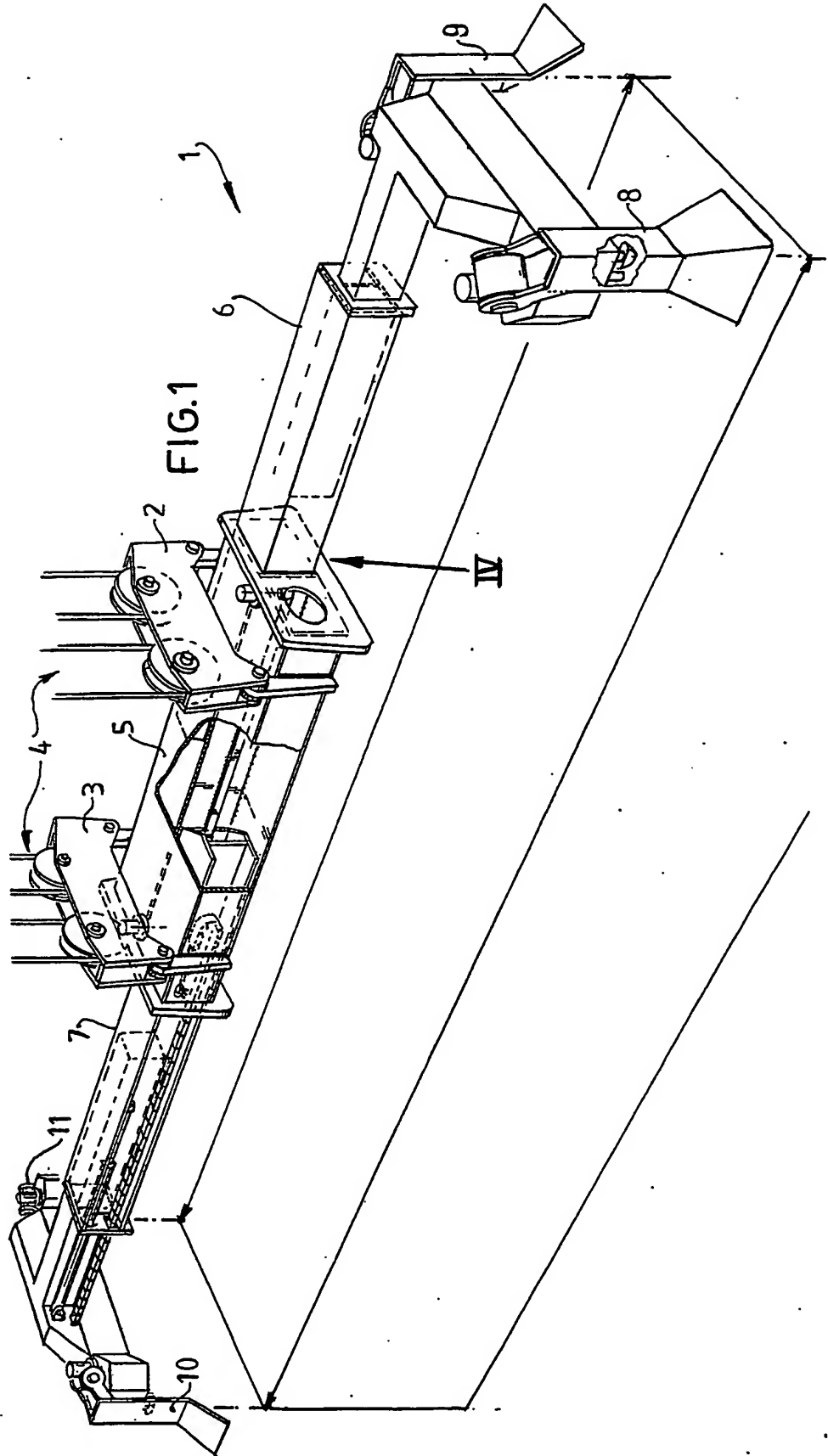
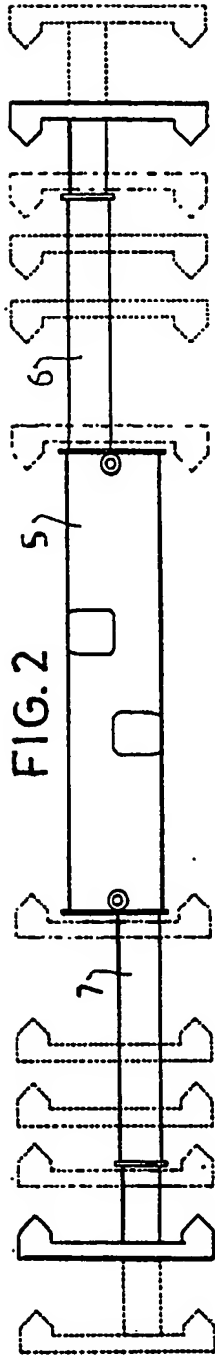
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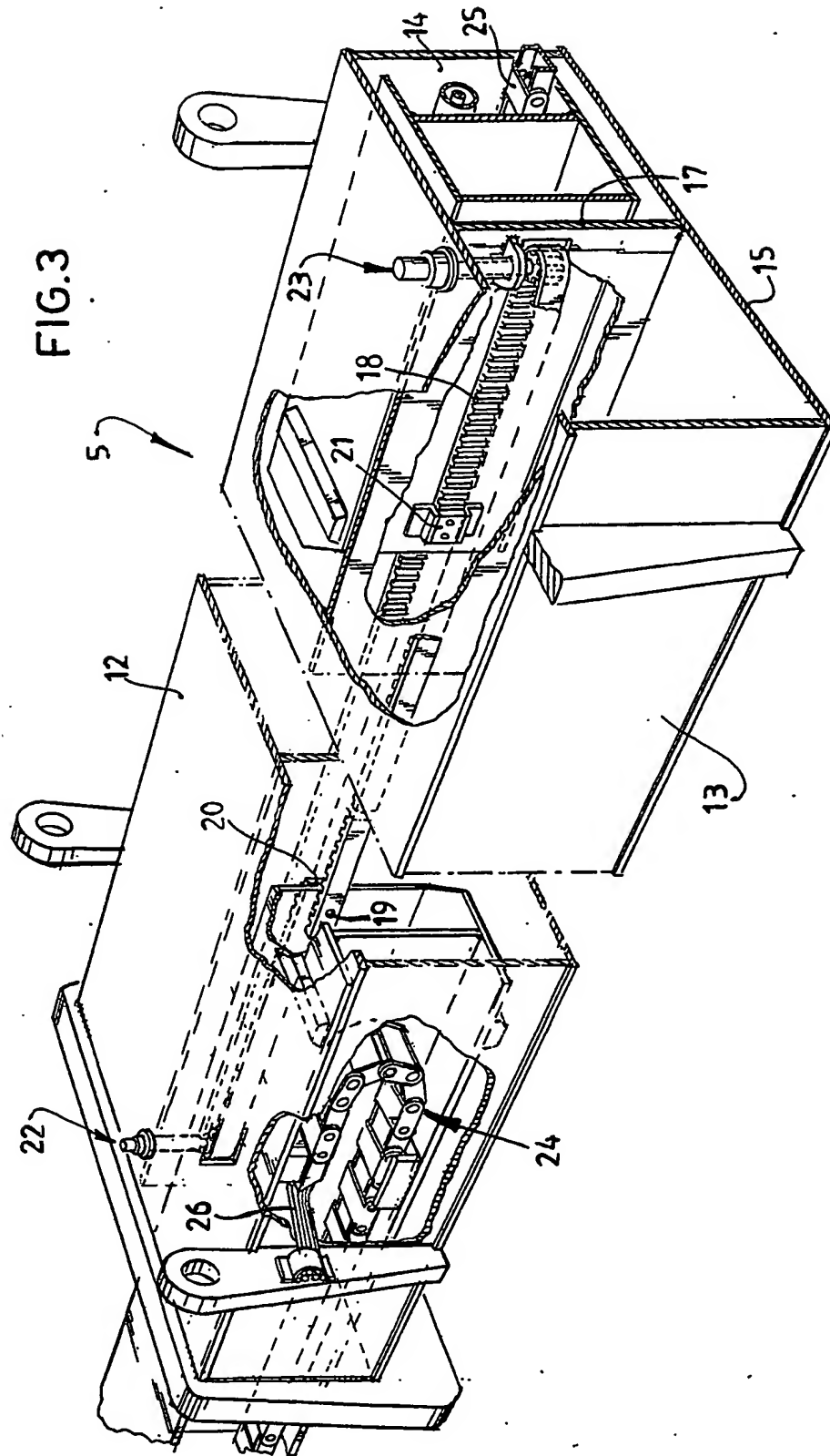
7. Hoisting frame (1) as claimed in claim 6, **characterized in that** the cable channel has the form of a flexible ladder channel (24, 25).

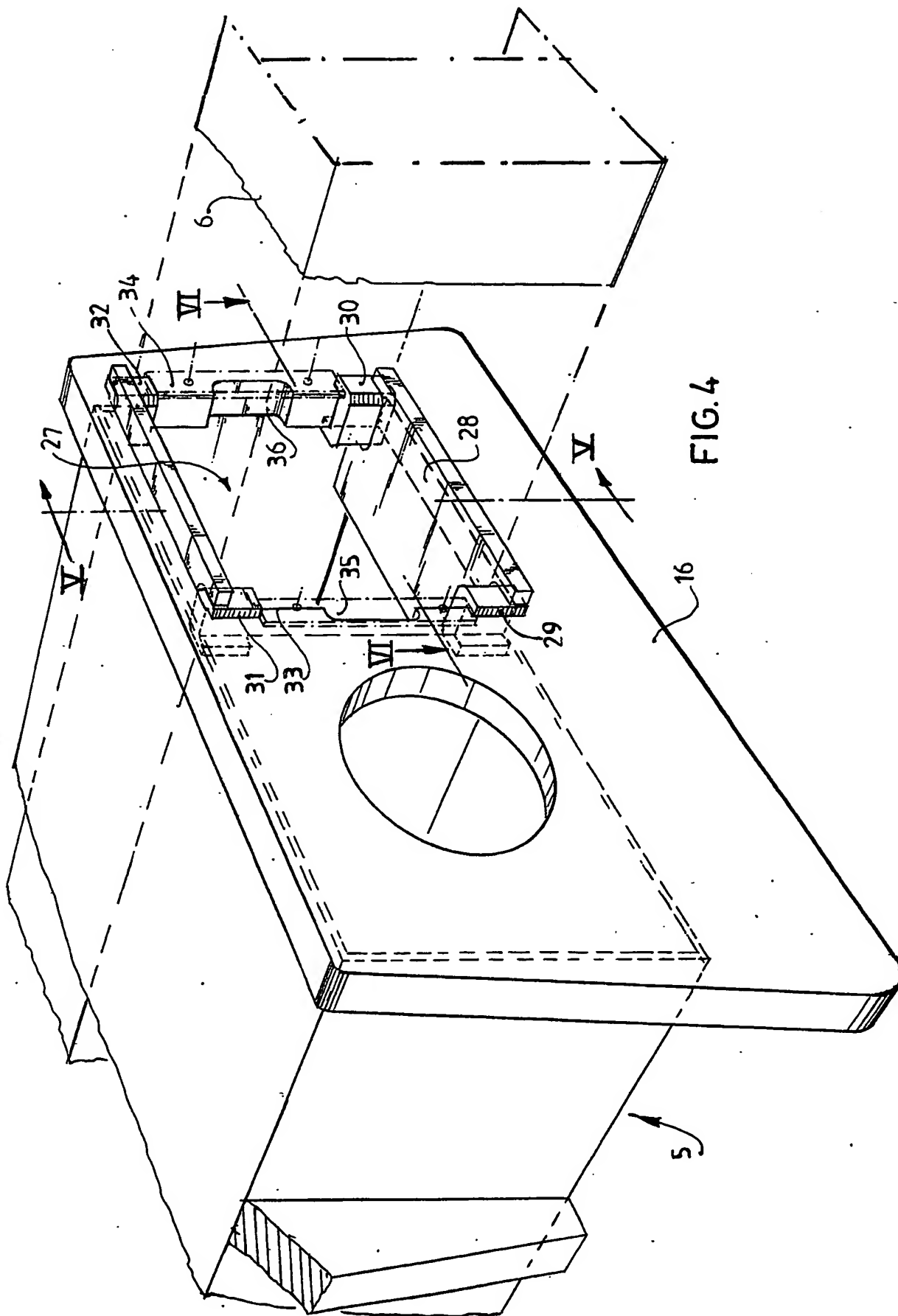
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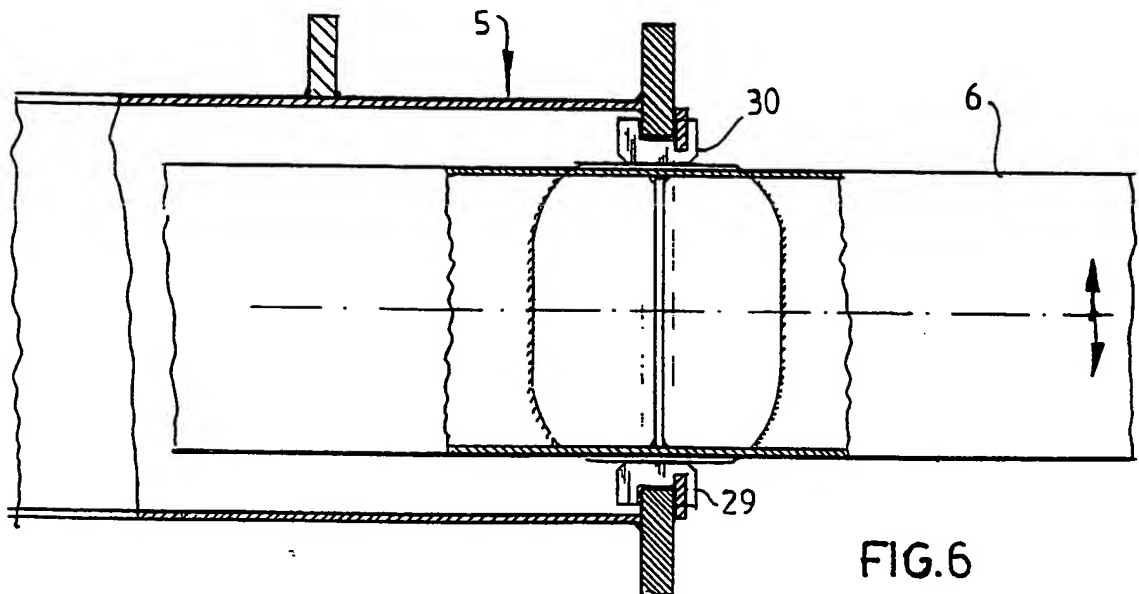
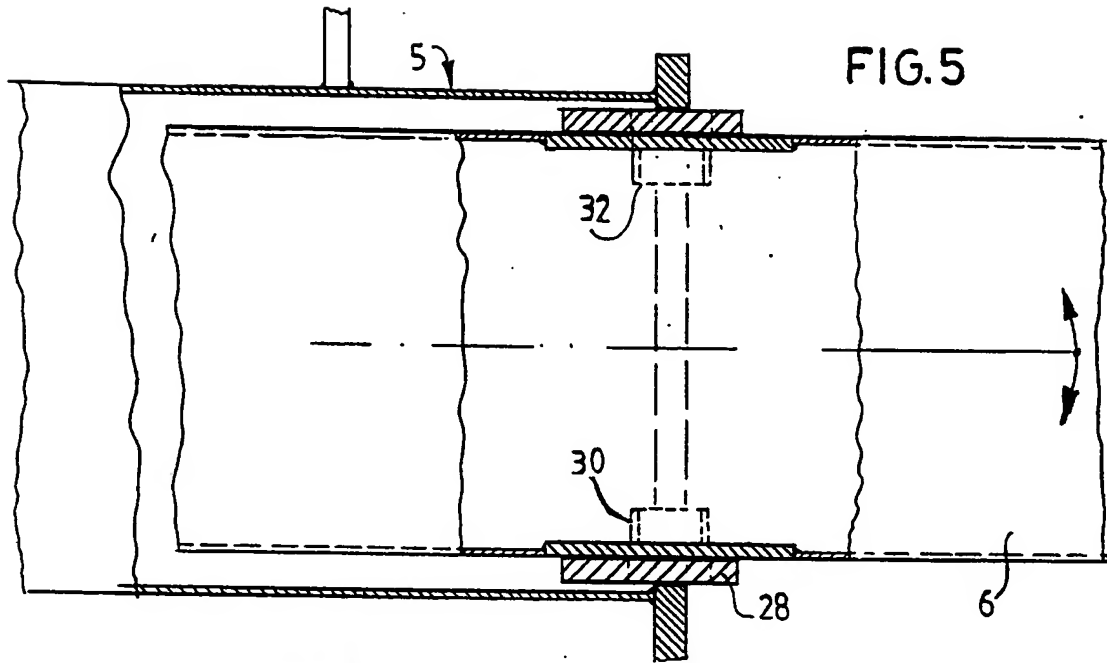
8. Hoisting frame (1) as claimed in claims 6-7, **characterized in that** the cable channel (24, 25) is surrounded on those sides by the associated beam (6, 7).

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# EUROPEAN SEARCH REPORT

Application Number

EP 89 20 2583

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	DE-A-2 119 479 (RUBERY, OWEN & CO.) * Page 3 (last. §); page 4 and 5; page 6 (§2 and 3) *	1	B 66 C 1/10
A	---	4,5	
X	DE-A-1 951 636 (JÜNKERATHER MASCHINENBAU) * Page 6 (penultimate §); page 7 (3 last §); page 8 (§ 1) *	1	
A	---	2,5	
A	US-A-3 734 324 (LYNCH)		
A	DE-A-1 531 132 (KRUPP)		
A	DE-A-2 044 437 (LANCER BOSS)		
A	US-A-3 514 146 (ZWEIFEL)		
A	FR-A-2 169 796 (LIDHULTS MEKANISKA VERKSTAD)		
A	DE-A-1 506 506 (DEMAG-ZUG)		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 66 C B 66 F
Place of search THE HAGUE		Date of completion of the search 15-01-1990	Examiner VAN DEN BERGHE E.J.J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	